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ART 34 AMDT

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Docket No.: 1248-0772PUS1  
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:  
Akiyoshi FUJII et al.

Application No.: Not Yet Assigned

Confirmation No.: N/A

Filed: February 25, 2005

Art Unit: N/A

For: TFT ARRAY SUBSTRATE, LIQUID CRYSTAL  
DISPLAY DEVICE, MANUFACTURING METHODS  
OF TFT ARRAY SUBSTRATE AND LIQUID  
CRYSTAL DISPLAY DEVICE, AND ELECTRONIC  
DEVICE

Examiner: Not Yet Assigned

LETTER

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The PTO is requested to use the amended sheets/claims attached hereto (which correspond to Article 19 amendments or to claims attached to the International Preliminary Examination Report (Article 34)) during prosecution of the above-identified national phase PCT application.

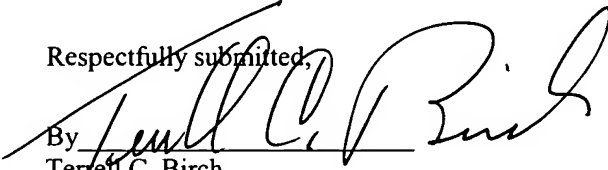
If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §1.16 or 1.14; particularly, extension of time fees.

Dated: February 25, 2005

Respectfully submitted,

TCB/smt

Attachment(s)

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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>03R00325</b>	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. <b>PCT/JP 03 / 11057</b>	International filing date (day/month/year) <b>29.08.2003</b>	Priority date (day/month/year) <b>30.08.2002</b>	
International Patent Classification (IPC) or national classification and IPC Int.Cl. <b>H01L29/786, H01L21/336, G02F1/1368, G09F9/00</b>			
Applicant <b>SHARP KABUSHIKI KAISHA</b>			

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.
3.	This report is also accompanied by ANNEXES, comprising: <div style="margin-left: 20px;"> a. <input checked="" type="checkbox"/> a total of <u>2</u> sheets, as follows: <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <div style="margin-left: 20px;"> <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. </div> </div> </div>

Date of submission of the demand <b>01.03.2004</b>	Date of completion of this report <b>22.11.2004</b>	
Name and mailing address of the IPEA/JP <b>Japan Patent Office</b> <b>3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan</b>	Authorized officer <b>TAKASHI WATAHIKI</b>	<b>4M</b>
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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP 03 / 11057

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ the international application as originally filed/furnished
- ☒ the description:  
pages 1-120 \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:  
pages 122-134 \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19  
pages\* 121, 121/1 received by this Authority on 12.08.2004  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:  
pages 1/35-35/35 \_\_\_\_\_ as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03 / 11057

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>2-35</u>	YES
	Claims	<u>1</u>	NO
Inventive step (IS)	Claims	<u>3, 7, 8, 11-18, 21, 25-33, 35</u>	YES
	Claims	<u>1, 2, 4-6, 9, 10, 19, 20, 22-24, 34</u>	NO
Industrial applicability (IA)	Claims	<u>1-35</u>	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

D1: WO 99/39373 A2 (TRUSTEES OF PRINCETON UNIVERSITY) 1999.08.05  
 whole document, Figs. 14A, 14B  
 & JP 2002-502098 A, whole document, Figs. 14A, 14B  
 & EP 1051738 A & US 6087196 A1 & AU 2481599 A  
 D2: WO 97/43689 A1 (SEIKO EPSON CORPORATION) 1997.11.20,  
 whole document, Fig. 4  
 & EP 855614 A1 & US 5989945 A1 & TW 449670 B  
 D3: EP 930641 A2 (SEIKO EPSON CORPORATION) 1999.07.21,  
 whole document, Figs. 1-20  
 & JP 11-204529 A, whole document, Figs. 1-20 & TW 383280 B

## [Claim 1]

The subject matter of claim 1 does not appear to be novel with respect to the D1 cited in the ISR. Claim 1 is amended by inserting "processed" between "the" and "semiconductor layer". But the meaning of "processed" is not specified in Claim 1. Therefore, "semiconducting layer 122" described in D1 is correspond to "processed semiconductor layer" in this application.

## [Claims 2, 4, 10, 19, 20, 34]

The subject matter of claims 2, 4, 10, 19, 20 and 34 does not appear to involve an inventive step in view of the D1. The technology which forms a gate electrode of a main line and a branch electrode is a well-known technology.

## [Claims 5, 6, 9]

The subject matter of claims 5, 6 and 9 does not appear to involve an inventive step in view of the D1. To form semiconductor layer in the exact position (= near gate, source and drain electrode) is obvious to a person skilled in the art.

## [Claims 22-24]

The subject matters of claims 22-24 do not appear to involve an inventive step in view of the D2 and the D3 cited in the ISR. The technologies of forming a convex guide and forming a lyophilic area and a lyophobic area to keep a droplet within the electrode area are known technologies. (see D3) The person skilled in the art would easily conceive the idea of applying these technologies to the invention disclosed in the D2.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP 03 / 11057

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of: **Box No. V**

[Claims 3,7,8,11-18,21,25-33,35]

The subject matters of claims 3,7,11-18,21,25-33 and 35 are neither disclosed in any of the documents cited in the ISR nor obvious to a person skilled in the art.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03 / 11057

## Box No. VI Certain documents cited

## 1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
JP 2003-318192 A [EX]	07.11.2003	22.04.2002	

## 2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure

Date of non-written disclosure  
(day/month/year)Date of written disclosure  
referring to non-written disclosure  
(day/month/year)

## CLAIMS

1. ( ) (amended) A TFT array substrate,  
comprising:

5 a thin film transistor section in which a gate electrode is  
formed on a substrate, and a semiconductor layer is formed  
on the gate electrode via a gate insulation layer,

the processed semiconductor layer having a shape  
formed by dropping a droplet.

10 2. The TFT array substrate as set forth in claim 1,  
wherein:

the gate electrode in the thin film transistor section is a  
branch electrode which is branched out of a main line of the  
15 gate electrode, and the branch electrode has an open end  
protruded from an area for the semiconductor layer.

3. The TFT array substrate as set forth in claim 2,  
wherein:

20 the branch electrode is arranged so that a portion  
protruded from the area for the semiconductor layer is  
smaller in width than a portion confined within the area for  
the semiconductor layer.

25 4. The TFT array substrate as set forth in claim 2,

- 121/1 -

wherein: